Carbon-Climate Workshop

Sunday: 15 March 2015

- Welcome Reception: *National Center for Employee Development*
  - 6:00 – 8:00PM

Monday: 16 March 2015

- *National Center for Employee Development*
  - Breakfast
  - 6:00 – 7:45AM
  - 7:45AM: Buses Depart for The Core Meeting Room; Research Campus

- *The Core Meeting Room*
  - 8:15 Welcome and Introductions (Berrien Moore)
    - Note to all participants: the First Day is directed at getting us all on the same page
  - 8:30 Carbon and Climate: The grand challenges (Dave Schimel)
    - *The global carbon budget-its uncertainties, and resulting uncertainty in the airborne fraction*. *Integrating land, atmosphere, ocean, anthroposphere perspectives*
  - 9:00 CEOS Strategy for Carbon Observations from Space (Berrien Moore)
    - *Priorities from CEOS on measurements of the land, atmosphere, and ocean*
  - 9:30 International perspective on carbon cycle

observations (Philippe Ciais)

- 10:00 The Decadal Survey and the Realities (Piers Sellers)
  - *"Gentlemen, we have run out of money. Now we have to think." Sir Winston Churchill*

- 10:30 Coffee and discussions

- 11:00 Charge to the Workshop: Improve our understanding of and our ability to predict the likely future trajectory of the Atmospheric Carbon Fraction (Piers Sellers)
  - Define the key science questions.
    a. What and where are the major sources and sinks of carbon? Where are the major uncertainties?
    b. How well do we understand how the natural sinks and sources could change with climate change?
    c. What new spaceborne observations could best help us with the above questions? What parts of the problem are most tractable? Are there studies we could do quickly that could help us do a better job of addressing this issue? (e.g., better OSSE's)
    d. How should we address the cal/val problem? Investments in networks? In field campaigns? In new/replicated (non-satellite) hardware?

  - Organize the workshop product.
    a. Discussion of the above questions – written product
    b. Identification of likely high-value satellite measurements, directly relevant to the Carbon-Climate issue. Separate identification of required supporting satellite measurements (e.g., weather variables). Create Tables with commentary.

c. Identification of required focused short-fuse studies that could help narrow or prioritize the total set of desired satellite measurements. Create Tables with commentary.
d. Cal/val issues. Discussion of what is needed for direct cal/val of the instrumentation.
    i. Cal/val of important model-derived variables (e.g., surface-atmosphere fluxes)
    ii. Cal/val for important processes in critical regions.
    iii. Critical regional studies (e.g. ABZ, tropics)

- Reports and papers
    a. Discussion of exactly what types of products should come out of the workshop; who is responsible for generating them; timelines, etc.
        i. Summary White Paper to be presented to the Decadal Survey, and shared with other study groups.
        ii. Science Forum article
        iii. Other

- 11:50 Open Discussion of the charge, high level strategy, products, timeline

12:30 LUNCH: *National Weather Center (1 minute walk)*

- 13:45 Uncertainties and unknowns: Carbon-Climate and CMIP (Scott Denning)
- 14:15 Uncertainties and unknowns: Current and future ocean models and observational needs (Galen Mckinley)
- 14:45 Uncertainties and unknowns: Current and future terrestrial models and observational needs (Debbie Huntzinger)
- 15:15 Emissions, urban and land use: What we know and

what we don't (Kevin Gurney)

15:45 Coffee

- 16:15 Discuss the Charge to the workshop again (Berrien Moore)

16:30 Break into Discussion Groups

- Modeling sources and sinks. Uncertainties.
  - What and where are the major sources and sinks of carbon? Where are the major uncertainties?
  - How well do we understand how the natural sinks and sources could change with climate change?
- Observations
  - What new space-borne observations could best help us with the above questions? What parts of the problem are most tractable? Are there studies we could do quickly that could help us do a better job of addressing this issue? (e.g., better OSSE's)
  - How should we address the cal/val problem? Investments in networks? in field campaigns? in new/replicated (non-satellite) hardware?

17:45 Buses Depart *The Core Meeting Room; Research Campus for National Center for Employee Development*

Dinner at National Center for Employee Development

Tuesday: 17 March 2015

- *National Center for Employee Development*
  - Breakfast
  - 6:00 – 7:45AM
  - 7:45AM: Buses Depart for The Core Meeting Room; Research Campus

- *The Core Meeting Room*
  - 08:15 Discussion Groups Report Out with Discussion
  - 09:30 Reconvene in Discussion Groups
    Coffee and beverages/snacks will be available throughout the day
  - 12:00 LUNCH—National Weather Center
  - 13:15 Discussion Groups Report Out with Discussion
  - 14:30 Reconvene in Discussion Groups

19:00 Dinner at FJJMA??? (Mona checking into)

Wednesday: 18 March 2015

- *National Center for Employee Development*
  - Breakfast
  - 6:00 – 7:45AM
  - 7:45AM: Buses Depart for The Core Meeting Room; Research Campus

- *The Core Meeting Room*
  - 08:15 Reconvene in Discussion/Writing Groups
  - 10:15 Discussion Groups Report Out with Discussion
  - 12:00 LUNCH—National Weather Center